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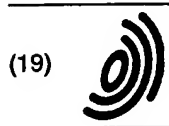
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(11)

**EP 0 575 867 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
05.02.1997 Bulletin 1997/06

(51) Int. Cl.<sup>6</sup>: **B65F 3/08**, B65F 3/10

(21) Application number: **93109550.9**

(22) Date of filing: **15.06.1993**

(54) **Bin hoist for lifting and tipping a bin**

Hub-Kippvorrichtung zum Heben und Kippen eines Müllbehälters

Dispositif de levage-bascule d'une poubelle

(84) Designated Contracting States:  
**DE ES FR GB NL SE**

(30) Priority: **22.06.1992 US 903078**  
**23.11.1992 US 979153**

(43) Date of publication of application:  
**29.12.1993 Bulletin 1993/52**

(60) Divisional application: **96112007.8**

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## Description

The present invention relates to a bin hoist according to the preamble of claim 1. (DE-B-1202645)

Bin hoists are used on collection vehicles, for example, vehicles used for collecting refuse, and on containers which are intended to receive material from a number of bins.

An object of the invention is to provide a bin hoist having an improved means for controlling movement of a bin during operation of the hoist.

According to a first aspect of the invention, there is provided a bin hoist comprising a bin carrier, holding means on the bin carrier for holding a bin on the carrier, a support for the bin carrier and tipping means for tipping the bin carrier relative to the support, wherein the tipping means includes an hydraulic motor and means for restricting the flow of hydraulic fluid to or from the motor as the bin carrier approaches an end of its travel in a tipped attitude wherein the hydraulic motor comprises a piston and cylinder unit, characterised in that there is in one end of the cylinder of said unit, a passage containing a fixed, hollow insert, a slidable insert which lies inside the fixed insert and defines alternative flow paths for hydraulic fluid into or from the cylinder, said flow paths having respective different resistances to flow of hydraulic fluid, a spring provided for biasing the slidable insert towards the interior of the cylinder and wherein the piston is engageable with the slidable insert to displace the slidable insert relative to the fixed insert and thereby change the path of hydraulic fluid into or from the cylinder as the piston approaches one end of its stroke.

Examples of bin hoists in accordance with the invention and which are used in the carrying out of methods embodying the invention will now be described, with reference to the accompanying drawings, wherein:

FIGURE 1 shows a perspective view of a refuse collection vehicle having a bin hoist at a rear of a body of the vehicle, together with a bin,

FIGURE 2A is a partial side view of an examples of refuse collection vehicle have a front load box arrangement,

FIGURE 2B shows, on a larger scale, a kick plate and associated parts incorporated in the vehicle of Figure 2A,

FIGURE 3 shows a part of the vehicle and a box arrangement of Figure 2A, together with a bin which has been inverted for emptying contents of the bin into the box,

FIGURE 4 is a perspective view of the hoist of the vehicle of Figure 1,

FIGURE 5 shows a partial cross-section of the hoist on the line 5-5 of Figure 4,

FIGURE 6A shows a perspective view of a bin which can be lifted and tipped by the hoist of Figure 4,

FIGURE 6B is a diagrammatic representation of parts of the hoist and of the bin, illustrating co-operation of the hoist of Figure 4 with the bin of Figure 6A,

FIGURE 7A shows a perspective view of a further example of bin which can be lifted and tipped by the hoist of Figure 4,

FIGURE 7B is a diagrammatic representation of parts of the hoist and of the bin of Figure 7A, illustrating co-operation between the hoist and the bin of Figure 7A,

FIGURES 8A - 8D are diagrammatic representations of successive stages in operation of the hoist of Figure 4 for lifting and tipping the bin of Figure 6A,

FIGURES 9A - 9D are diagrammatic representations illustrating operation of the hoist of Figure 4 to lift and tip the bin of Figure 7A,

FIGURE 10 shows a cross-section of the hoist on the line 10-10 of Figure 4,

FIGURE 11 is a view of the hoist of Figure 4 from the rear,

FIGURES 12A - 12E are diagrammatic representations of stages in operation of the hoist of Figure 4 to lift and tip a bin,

FIGURE 13 shows a partial cross-section of the hoist to illustrate tipping means of the hoist,

FIGURE 14 is a different partial cross-section of the hoist illustrating adjustment means of the hoist,

FIGURE 15 is a perspective view of certain parts of the hoist of Figure 4 illustrating features of an extendable bin rest of the hoist,

FIGURES 16A and 16B are perspective views (showing opposite sides) of sequencing means which may be incorporated in the hoist of Figure 4, FIGURES 17 and 18 show different cartridges which may be incorporated in the sequencing means of Figure 16A

FIGURE 19 shows diagrammatically an hydraulic circuit of the hoist of Figure 4,

FIGURE 20 is a perspective view of certain parts only of a further example of hoist, illustrating a modification of the hoist of Figure 4,

FIGURE 21 shows a partial cross-section on the line 21-21 of Figure 20,

FIGURE 22 shows a partial cross-section on the line 22-22 of Figure 20,

FIGURE 23 shows on an enlarged scale certain of the parts shown in Figure 22,

FIGURE 24 shows in cross-section certain parts of tipping means of the hoist of Figure 4,

FIGURE 25 shows on a further enlarged scale certain parts shown in Figure 24, and

FIGURE 26 is a view corresponding to Figure 25 but representing a movable component of the tipping means in a different position.

Figure 1 shows a refuse collection vehicle 22 having a bin hoist 20 mounted on horizontal rail 24 at

the rear of a body of the vehicle. Adjacent to the rear of the body, there is a hopper and the hoist can be used for lifting a bin 26 and discharging contents of the bin into the hopper. The particular bin represented in Figure 1 has a pair of vertically spaced, horizontal bars 30 and 32 with which the hoist can co-operate.

The hoist, which is shown more clearly in Figure 4, comprises a bin carrier 100 provided with alternative sets of holding means for holding bins of respective different kinds on the bin carrier. A first of the holding means comprises a lower clamp member 102 and an upper clamp member 104 between which there can be received the lip 52 of the bin 50 represented in Figure 3. The lower clamp 102 is fixed on the bin carrier 100 and the upper member 104 is connected with the bin carrier for pivoting relative thereto towards and away from the lower member 102 about a generally horizontal axis. Reference no. 106 identifies actuation means for moving the upper clamp member 104. This actuation means includes at least one linkage 108 linking the upper clamp member 104 with further components of the hoist which move during operation of the hoist.

The second of the holding means includes a lower member 110 mounted for pivotal movement relative to the bin carrier 100 between an extended position, which is represented by full lines in Figures 4 and 5, and a retracted position represented by a broken line in Figure 5. A spring is provided for urging the member 110 to the extended position and the member can be pushed to the retracted position by the bin 50 if that bin approaches the bin carrier 100.

The second holding means further comprises an upper member 116 which is also mounted for pivoting relative to the bin carrier 100 between an extended position represented by full lines in Figures 4 and 5 and a retracted position represented by a broken line. A spring is provided for urging the upper member 116 towards its extended position and this member can be pushed to its retracted position by the bin 50, if that bin approaches the bin carrier 100.

The second holding means 110, 116 is used for holding the bin 26 on the bin carrier 100, the holding means engaging the bars 30 and 32 of the bin, as represented in Figure 6B.

The bin 50 is shown in Figure 7A and the way in which the first holding means 102, 104 co-operates with the lip 52 of this bin is represented in Figure 7B.

The hoist further comprises a support 154 for the bin carrier 100. The support is guided by upright guides 162 and 164 for upward and downward movement relative to the body of the vehicle 22 and lifting means comprising an hydraulic cylinder 172 is provided for raising the support 154 and the bin carrier 100 relative to the guides 162 and 164. The support 154 may include a support frame 178 which comprises a pair of generally vertical support elements 180 and 182 with rollers 184 carried on the support elements to run in the vertical guides 162 and 164.

For tipping the bin carrier 100 relative to the support

154, there is provided tipping means 166 which includes an hydraulically actuated rotary motor having a transverse output shaft 186 with respective ends 188 and 190. A pair of torque arms 192 and 194 are received on and fixed with respect to the end portions of the output shaft. The opposite ends of the torque arms are pivotally connected with the bin carrier 100 at points 196 and 198 adjacent to a base 200 of the bin carrier. Bolts 202 provide respective bearings 204 for each of the torque arms.

A pair of idler arms 206 and 208 is pivotally connected adjacent to respective first ends thereof on the support frame 178 and adjacent to second ends thereof on the bin carrier 100. The respective pivot axes 210 and 212 about which the idler arms pivot relative to the support 154 and the bin carrier 100 are spaced considerably from the base portion 200 of the bin carrier and are offset from the attachment points 196 and 198 of the torque arms 192 and 194.

The linkage 108 acts between the upper clamp member 104 and one of the arms 192, 194, 206 and 208. The length of the linkage 108 may be adjustable to vary the action of the upper clamp 104.

Figure 11 shows in more detail an example of a suitable linkage, connecting arms 216 and 218 to torque arms 192 and 194 respectively. It will be understood that alternatively the linkage may be connected with the idler arms 206 and 208.

The hoist further comprises a bin rest 226 mounted for reciprocation relative to the bin carrier 100 between an extended position and a retracted position relative to a lower margin of the bin carrier. On the bin rest, there is a roller 248 for bearing against the bin 50 when the bin is lifted from the ground by the holding means 102, 104. A pair of links 228 and 230 are connected between the bin rest 226 and the support 154, for example a frame 178 of the support. The links 228 and 230 are free to pivot relative to the bin rest and the support.

Channels 232 and 234 are provided on the bin carrier 100 at the face thereof which faces forwards with respect to the vehicle, when the bin carrier is in the lowered position. The bin rest 226 includes a plate having opposite marginal portions which are received in the side channels 232 and 234.

The lower member 110 of the second holding means is carried on the bin rest 226 for reciprocation therewith relative to the bin carrier 100.

Tipping means 166 for tipping the bin carrier 100 relative to the support 154 is shown in Figure 13. Suitable tipping means is disclosed in US-4,773,812. The tipping means comprises an hydraulic piston and cylinder unit with a rack incorporated in or mounted on a piston rod of this unit and a pinion mounted on the output shaft 186 of the tipping means. Respective teeth of the rack and pinion are mutually enmeshed inside the cylinder of the piston and cylinder unit, where they are lubricated by the hydraulic fluid supplied to the cylinder.

The piston and cylinder unit of the tipping means 166 are incorporated in the hydraulic circuit represented

in Figure 19 and certain other components of this circuit are represented in Figures 16-18. Hose interconnections designated in the same way in these Figures, for example as "A" correspond. Figure 17 shows a check valve cartridge 270 which is outfitted with an O-ring seal 274 and a further O-ring seal 276 which is adjacent to a pair of back-up washers 278 and 280. The check valve cartridge 270 is incorporated in the dual sequence valve 268. Element 282 associated with this valve is a plug for sealing ports of the valve not used in the circuit of Figure 19.

Element 272 is a further sequence valve cartridge which also includes O-ring seals and which is incorporated in the dual sequence valve 268. In Figure 19, the components within the broken line 300 constitute the dual sequence valve 268. The components within the broken line 302 constitute a diverter valve.

The diverter valve is arranged for receiving hydraulic fluid through a main pressure line 304 from an hydraulic pump or similar source. When appropriately set, the diverter valve can cause the pressurised fluid to be directed to compaction means of the vehicle 222 via hydraulic line 306. The diverter valve 302 can also direct hydraulic fluid along line 308 to operate the hoist 20. The reference numeral 310 identifies a hand-operated valve for initiating operation of the hoist.

In Figure 19, the reference numeral 320 identifies a piston and cylinder unit corresponding to the lift cylinder 172.

When the valve 310 is actuated to direct hydraulic fluid through port VA into the dual sequencing valve 268, that fluid is initially directed through port C1A to the piston and cylinder unit 320 to extend that unit and thereby raise the support 154 relative to the guides 162 and 164. When the pressure at the port C1A exceeds a predetermined threshold value, for example  $6.89 \times 10^6 \text{ Pa}$  (1000 Psi) the sequence valve cartridge 270 shifts so as to direct the hydraulic fluid flow through port C2A. The return of hydraulic fluid from tipping means 322 is via port VB to the hydraulic reservoir.

The piston and cylinder unit of the tipping means 166 comprises means for restricting flow of hydraulic fluid into or from the cylinder of the unit. This means comprises a member guided for reciprocation relative to the cylinder of the unit along a path which is parallel to the path of reciprocation of the piston of the unit. During operation of the device, the member is engaged by the piston and moved by the piston but through only a part of the stroke of the piston. Movement of this member relative to the cylinder changes the flow path for the fluid and either increases or decreases the resistance to flow of the fluid into and from the cylinder.

In the example illustrated, the tipping means 166 comprises two cylinders with a respective piston acting in each cylinder. Respective end portions of the cylinders are defined by a common head 406 in which there is a passage 446 forming a part of an oil port 414 which has a first predetermined diameter.

The member which is engaged by and is moved by

the piston is a movable insert designated by the reference numeral 416. This insert has at least first and second openings 418, 420 which are of respective different sizes. The spring 422 is provided for biasing the insert 416 into the cylinder 264 so as to be contacted by the piston 410 as the piston is at an end 424 of the cylinder 264.

Figure 25 shows the movable insert 416 in a first position in which it protrudes into the cylinder. Figure 26 shows the movable insert in a second position in which it no longer protrudes into the cylinder. By movement of the insert from the first position to the second position, the openings 418 are displaced from alignment with oil port 414 so as to permit alignment of the second opening 420 with that port. In the example illustrated, the bore of the opening 420 is relatively smaller than that of the openings 418 so that fluid flow is restricted when directed through the second opening 420.

The movable insert 416 has at the end of the insert which protrudes into the cylinder when the insert is in the first position, an opening 428 leading to a central passageway 426. When the piston is spaced from the insert, fluid can flow through the opening 428 but contact of the piston with the insert substantially closes the opening 428. One or more additional openings 430 is formed in the movable insert 416 near to the opening 428 to permit continued flow of fluid into or from the central passageway 426 when the opening 428 is closed by the piston and the insert remains in or near to the first position. As the insert is moved by the piston into its second position, the openings 430 become obscured so that fluid can no longer flow through them. As the piston drives the movable insert from the cylinder, the flow of fluid between the cylinder and the central passage 426 of the insert is progressively restricted until it is terminated.

The piston drives the movable insert 416 from the cylinder as the bin carrier 100 approaches the limit of its upward movement relative to the support 154. Accordingly, the bin carrier is decelerated as it approaches the limit of its upward tipping movement. Furthermore, flow of hydraulic fluid is restricted when return movement of the bin carrier commences so that the bin carrier accelerates gradually. This reduces the magnitude of the forces transmitted between the bin carrier and the bin and reduces the risk of the bin being damaged.

It will be noted that, when in the first position, the movable insert 416 protrudes into the cylinder only a short distance, as compared with the stroke of the piston 410 so that the insert moves with the piston through only a small fraction of the stroke of the piston.

The movable insert 416 is mounted in a fixed, tubular insert 450 which is received in a central passageway 444 defined by the cylinder head 406. The passage 444 is coaxial with the cylinder 264.

The fixed insert 450 has an annular relief 462 which permits fluid to flow around the outside of the fixed insert and through any one of a number of holes 464 formed in the wall of the insert and leading to a central

passage thereof. This central passage contains the movable insert 416 which is a sliding fit inside the fixed insert. The movable insert has a flange at one of its ends which engages with the fixed insert to limit travel of the movable insert in a direction towards the piston.

The movable insert 416 also has an annular relief 466 around the outside of the movable insert and adjacent to the second fluid flow path holes 420. Fluid can flow around the outside of the movable insert 416 whenever this insert is in the second position, represented in Figure 26, so that fluid passes through the bore 414, the holes 464, the relief 466 and through the bore 420. The diameter of the bore 420 is typically 0.75mm. In contrast, the holes 418 may have a diameter of up to 4mm. Preferably, there is a plurality of holes 418, there is a plurality of holes 418, for example four. The number of holes 420 is smaller. There may be one or two of these holes.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, or a class or group of substances or compositions, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

#### Claims

1. A bin hoist comprising a bin carrier (100), holding means (102, 104), on the bin carrier for holding a bin (50) on the carrier, a support (154) for the bin carrier and tipping means (166) for tipping the bin carrier relative to the support, wherein the tipping means includes an hydraulic motor and means (408) for restricting the flow of hydraulic fluid to or from the motor as the bin carrier approaches an end of its travel in a tipped attitude, wherein the hydraulic motor comprises a piston and cylinder unit, characterised in that there is in one end of the cylinder of said unit, a passage containing a fixed, hollow insert (450), a slidable insert (416) which lies inside the fixed insert and defines alternative flow paths for hydraulic fluid into or from the cylinder, said flow paths having respective different resistances to flow of hydraulic fluid, a spring (422) provided for biasing the slidable insert towards the interior of the cylinder and wherein the piston is engageable with the slidable insert to displace the slidable insert relative to the fixed insert and thereby change the path of hydraulic fluid into or from the cylinder as the piston approaches an end of its stroke.
2. A bin hoist according to Claim 1 wherein the hydraulic motor further comprises an output shaft (186) which is rotatable relative to the cylinder of said unit, a rack and a pinion, the rack (262) being incorporated in or carried on a piston rod of said unit, the pinion being carried on or incorporated in the output shaft (116) and the rack and pinion having respective teeth (260) which are enmeshed with each other within the cylinder of said unit.
3. A bin hoist according to Claim 1 or Claim 2 wherein the slidable insert includes a plurality of holes defining a first flow path thereof, the slidable insert further including at least one hole (418) defining a second flow path thereof, and wherein there is at the outside of the slidable insert, and adjacent to the second flow path hole, an annular passage (466).
4. A bin hoist according to Claim 3 wherein the plurality of holes included in the slidable insert defining a first flow path thereof have different sized bores to the at least one hole (418) defining a second flow path thereof.
5. A bin hoist according to any one of the preceding claims wherein there is at the outside of the fixed insert (450) an annular passage (462), a plurality of holes (464) formed through the fixed insert from the passage at the outside thereof to the passage containing the slidable insert (416).
6. A bin hoist according to any one of the preceding claims wherein the slidable insert (416) includes a central passage and the or a lateral hole (418) communicating between the outside of the slidable insert and the central passage thereof.
7. A bin hoist according to any one of the preceding claims wherein the slidable insert (416) has means for limiting travel of the slidable insert relative to the cylinder in a direction towards the piston.
8. A bin hoist according to any of the preceding claims comprising at least one pair of arms (192, 216, 206, 194, 218, 208), each arm being connected between the support and the bin carrier and arranged for pivoting relative to both the support and the bin carrier about respective mutually parallel axes when the tipping means tips the bin carrier relative to the support between a lowered position and a raised position, and wherein, when the bin carrier is in the lowered position, the axis about which one of said arms pivots relative to the bin carrier is offset from a plane containing at least two other of said axes in a direction from the support towards the holding means.
9. A bin hoist according to Claim 8 wherein one arm (216, 218) of the or each pair of arms is substantially shorter than is the other arm of the pair.
10. A bin hoist according to any one of the preceding

claims wherein the bin carrier includes a bin rest (226) arranged for movement relative to the bin carrier between an extended position and a retracted position, the movement of the bin rest relative to the bin carrier from the extended position to the retracted position being upward movement when the bin carrier is in a lowered position.

11. A bin hoist according to Claim 10 further comprising means for extending the bin rest (226) when the bin carrier is tipped relative to the support.
12. A bin hoist according to Claim 11 wherein said means for extending includes a link connected with the bin rest and connected with the support.

#### Patentsprüche

1. Hub-Kippvorrichtung für Müllbehälter, die einen Behälterträger (100), Halteeinrichtungen (102, 104) auf dem Behälterträger zum Halten eines Müllbehälters (50) auf dem Träger, eine Halterungssstütze (154) für den Behälterträger und Kippeinrichtungen (166) zum Kippen des Behälterträgers relativ zu der Halterungssstütze umfaßt, wobei die Kippeinrichtung einen Hydraulikmotor und Einrichtungen (408) zum Begrenzen der Strömung des Hydraulikfluids zu oder von dem Motor, wenn sich der Behälterträger einem Ende seiner Laufstrecke in einer gekippten Stellung nähert, enthält, wobei der Hydraulikmotor eine Kolben- und Zylindereinheit umfaßt, dadurch gekennzeichnet, daß in einem Ende des Zylinders der besagten Einheit ein Durchgangsweg, der ein festes, hohles Einsatzteil (450) enthält, ein gleitfähiges Einsatzteil (416), das innerhalb des festen Einsatzteils liegt und alternative Strömungswege für Hydraulikfluid in den oder aus dem Zylinder vorgibt, wobei diese Strömungswege entsprechend unterschiedliche Strömungswiderstände für Hydraulikfluid haben, und eine Feder (422) zum Vorspannen des gleitfähigen Einsatzteils in Richtung auf das Innere des Zylinders vorgesehen sind und daß der Kolben mit dem gleitfähigen Einsatzteil zum Eingriff kommen kann, um das gleitfähige Einsatzteil relativ zu dem festen Einsatzteil zu verschieben und dadurch den Weg des Hydraulikfluids in den oder aus dem Zylinder zu verändern, wenn sich der Kolben einem Ende seines Hubs nähert.
2. Ein Hub-Kippvorrichtung nach Anspruch 1, bei der der Hydraulikmotor weiterhin eine Abtriebswelle (186), die relativ zu dem Zylinder der besagten Einheit drehbar ist, eine Zahnstange und ein Ritzel umfaßt, wobei die Zahnstange (262) in eine Kolbenstange der besagten Einheit inkorporiert ist oder auf dieser getragen wird, das Ritzel in der Abtriebswelle (116) inkorporiert ist oder auf ihr

getragen wird und Zahnstange und Ritzel entsprechende Zähne (260) haben, die miteinander innerhalb des Zylinders der besagten Einheit im Eingriff stehen.

3. Eine Hub-Kippvorrichtung nach Anspruch 1 oder Anspruch 2, bei der das gleitfähige Einsatzteil eine Vielzahl von Löchern enthält, die einen ersten Strömungsweg von ihm festlegen, das gleitfähige Einsatzteil weiterhin wenigstens ein Loch (418) enthält, das einen zweiten Strömungsweg von ihm festlegt, und bei der an der Außenseite des gleitfähigen Einsatzteils und benachbart dem zweiten Strömungswegloch ein ringförmiger Durchgangsweg (466) vorgesehen ist.
4. Eine Hub-Kippvorrichtung nach Anspruch 3, bei der die Vielzahl der Löcher, die in dem gleitfähigen Einsatzteil vorgesehen sind und einen ersten Strömungsweg von ihm festlegen, unterschiedlich bemessene Bohrungen gegenüber dem wenigstens einen Loch (418), das einen zweiten Strömungsweg von ihm festlegt, aufweisen.
5. Eine Hub-Kippvorrichtung nach einem der vorhergehenden Ansprüche, bei der an der Außenseite des festen Einsatzteils (450) ein ringförmiger Durchgangsweg (462) vorgesehen ist und eine Vielzahl von Löchern (464) durch das feste Einsatzteil von dem Durchgangsweg an seiner Außenseite zu dem Durchgangsweg, der das gleitfähige Einsatzteil (416) enthält, ausgeformt sind.
6. Eine Hub-Kippvorrichtung nach einem der vorhergehenden Ansprüche, bei der das gleitfähige Einsatzteil (416) einen zentralen Durchgangsweg enthält und das seitliche Loch oder ein seitliches Loch (418) zwischen der Außenseite des gleitfähigen Einsatzteils und dessen zentralem Durchgangsweg für Flüssigkeitskommunikation sorgt.
7. Eine Hub-Kippvorrichtung nach einem der vorhergehenden Ansprüche, bei der das gleitfähige Einsatzteil (416) Einrichtungen zum Begrenzen des Arbeitsweges des gleitfähigen Einsatzteils relativ zu dem Zylinder in einer Richtung auf den Kolben zu aufweist.
8. Eine Hub-Kippvorrichtung nach einem der vorhergehenden Ansprüche, die wenigstens ein Paar Arme (192, 216, 206, 194, 218, 208) umfaßt, wobei jeder Arm zwischen der Halterungssstütze und dem Behälterträger verbindend angebracht ist und zum Schwenken relativ sowohl zu der Halterungssstütze als auch zu dem Behälterträger um entsprechende zueinander parallele Achsen, wenn die Kippeinrichtung den Behälterträger relativ zu der Halterungssstütze zwischen einer abgesenkten Position und einer angehobenen Position kippt, angeordnet ist,



und bei der dann, wenn sich der Behälterträger in der abgesenkten Position befindet, die Achse, um die einer der besagten Arme relativ zu dem Behälterträger schwenkt, außerhalb einer Ebene, die wenigstens zwei andere dieser Achsen enthält, in einer Richtung von der Halterungstütze in Richtung auf die Halteeinrichtungen liegt.

9. Eine Hub-Kippvorrichtung nach Anspruch 8, bei der ein Arm (216, 218) des Paares der Arme oder jedes Paares der Arme wesentlich kürzer ist als es der andere Arm des Paares ist.
10. Eine Hub-Kippvorrichtung nach einem der vorhergehenden Ansprüche, bei der der Behälterträger eine Behälterauflage (226) enthält, die für eine Bewegung relativ zu dem Behälterträger zwischen einer ausgestreckten Position und einer zurückgezogenen Position ausgelegt ist, wobei die Bewegung der Behälterauflage relativ zu dem Behälterträger von der ausgestreckten Position zu der zurückgezogenen Position eine Bewegung nach oben ist, wenn sich der Behälterträger in einer abgesenkten Position befindet.
11. Eine Hub-Kippvorrichtung nach Anspruch 10, die außerdem eine Einrichtung zum Ausstrecken der Behälterauflage (226), wenn der Behälterträger relativ zu der Halterungstütze gekippt ist, umfaßt.
12. Ein Hub-Kippvorrichtung nach Anspruch 11, bei der die Einrichtung zum Ausstrecken ein Verbindungs-glied enthält, das sowohl mit der Behälterauflage als auch mit der Halterungstütze verbunden ist.

#### Revendications

1. Dispositif de hissage de poubelle comprenant un porteur de poubelle (100), des moyens de soutien (102, 104) situés sur le porteur de poubelle pour soutenir une poubelle (50) sur le porteur, un support (154) destiné au porteur de poubelle et un moyen de basculement (166) pour basculer le porteur de poubelle par rapport au support, dans lequel le moyen de basculement comprend un moteur hydraulique et un moyen (408) pour restreindre l'écoulement de fluide hydraulique allant vers le moteur ou provenant de celui-ci lorsque le porteur de poubelle s'approche d'une extrémité de son parcours en situation basculée, dans lequel le moteur hydraulique comprend un ensemble de piston et cylindre, caractérisé en ce qu'il existe à l'une des extrémités du cylindre dudit ensemble un passage contenant une pièce encastrée fixe (450), une pièce encastrée coulissante (416) laquelle se trouve à l'intérieur de la pièce encastrée fixe et définit des voies d'écoulement alternées pour le fluide hydraulique entrant dans le cylindre ou en sortant, les dites voies d'écoulement comportant des éléments

différents correspondants de résistance à l'écoulement du fluide hydraulique, un ressort (422) prévu pour solliciter la pièce encastrée coulissante vers l'intérieur du cylindre et dans lequel le piston peut s'introduire dans la pièce encastrée coulissante pour déplacer la pièce encastrée coulissante par rapport à la pièce encastrée fixe et modifier ainsi la voie d'écoulement du fluide hydraulique entrant dans le cylindre ou en sortant lorsque le piston s'approche de l'une des extrémités de sa course.

2. Dispositif de hissage de poubelle selon la revendication 1, dans lequel le moteur hydraulique comprend en outre un arbre de sortie (186), lequel peut tourner par rapport au cylindre dudit ensemble, une crémaillère et un pignon, la crémaillère (262) étant incorporée dans la tige de piston dudit ensemble ou portée par celle-ci, le pignon étant porté sur l'arbre de sortie (116) ou incorporé dans celui-ci et la crémaillère et le pignon comportant des dents correspondantes (260) qui sont engrenées les unes avec les autres à l'intérieur du cylindre dudit ensemble.
3. Dispositif du hissage de poubelle selon la revendication 1 ou la revendication 2, dans lequel la pièce encastrée coulissante comprend une pluralité de perçage définissant une première voie d'écoulement, la pièce encastrée coulissante comprenant en outre au moins un perçage (418) définissant sa seconde voie d'écoulement, et dans lequel il existe à l'extérieur de la pièce encastrée coulissante un passage annulaire (466) adjacent au second perçage de voie d'écoulement.
4. Dispositif de hissage de poubelle selon la revendication 3, dans lequel la pluralité de perçages présents dans la pièce encastrée coulissante définissant une première voie d'écoulement dans celle-ci comportent différents alésages dimensionnés à au moins l'un des perçages (418) définissant une seconde voie d'écoulement dans celle-ci.
5. Dispositif de hissage de poubelle selon l'une quelconque des revendications précédentes, dans lequel il existe à l'extérieur de la pièce encastrée fixe (450) un passage annulaire (462), une pluralité de perçages (464) traversant la pièce encastrée fixe depuis le passage à l'extérieur de celle-ci jusqu'au passage contenant la pièce encastrée coulissante (416).
6. Dispositif de hissage de poubelle selon l'une quelconque des revendications précédentes, dans lequel la pièce encastrée coulissante (416) comprend un passage central et le perçage ou un perçage latéral (418) établit une communication entre l'extérieur de la pièce encastrée coulissante et le passage central de celle-ci.

7. Dispositif de hissage de poubelle selon l'une quelconque des revendications précédentes, dans lequel la pièce encastrée coulissante (416) comporte un moyen pour limiter le parcours de la pièce encastrée coulissante par rapport au cylindre dans une direction allant vers le piston. 5
8. Dispositif de hissage de poubelle selon l'une quelconque des revendications précédentes comprenant au moins une paire de bras (192, 216, 206, 194, 218, 208), chaque bras faisant la liaison entre le support et le porteur de poubelle et étant aménagé pour pivoter par rapport à la fois au support et au perçage de poubelle autour des axes parallèles correspondants réciproquement lorsque le moyen de basculement bascule le porteur de poubelle par rapport au support entre une position basse et une position élevée, et dans lequel, lorsque le porteur de poubelle se trouve dans la position basse, l'axe autour duquel l'un des bras pivote par rapport au porteur de poubelle est décalé par rapport à un plan contenant au moins deux des autres dits axes dans une direction allant du support vers le moyen de soutien. 10 15 20 25
9. Dispositif de hissage de poubelle selon la revendication 8, dans lequel l'un des bras (216, 218) de la paire de bras ou de chaque paire de bras est sensiblement plus court que l'autre bras de la paire. 30
10. Dispositif de hissage de poubelle selon l'une quelconque des revendications précédentes, dans lequel le porteur de poubelle comprend un appui de poubelle (226) aménagé pour se déplacer par rapport au porteur de poubelle entre une position d'extension et une position rétractée, le déplacement de l'appui de poubelle par rapport au porteur de poubelle depuis la position d'extension jusqu'à la position rétractée étant un déplacement vers le haut lorsque le porteur de poubelle se trouve à la position basse. 35 40
11. Dispositif de hissage de poubelle selon la revendication 10, comprenant en outre, un moyen destiné à l'extension de l'appui de poubelle (226) lorsque le porteur de poubelle est basculé par rapport au support. 45
12. Dispositif de hissage de poubelle selon la revendication 11, dans lequel le dit moyen destiné à l'extension comprend une articulation reliée à l'appui de poubelle et reliée au support. 50

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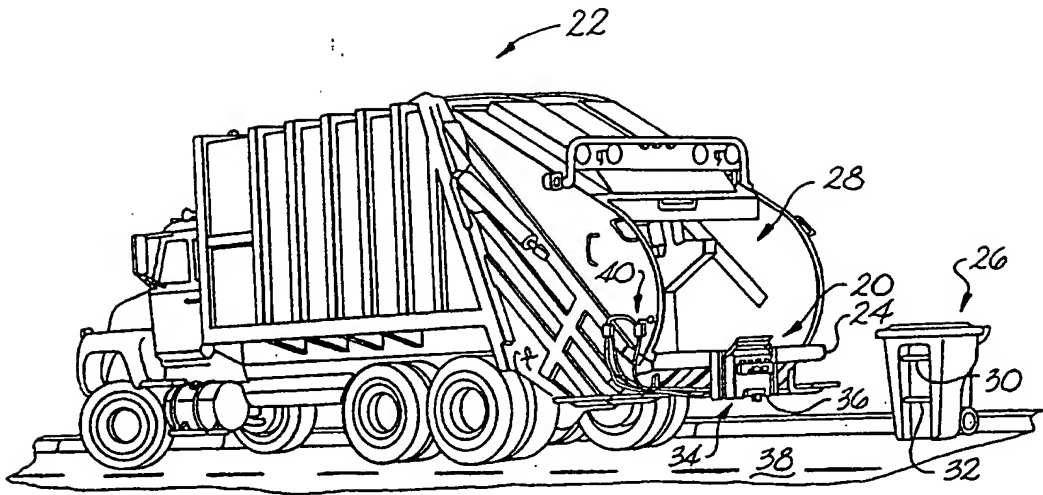


Fig. 1

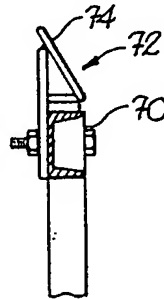


Fig. 2B

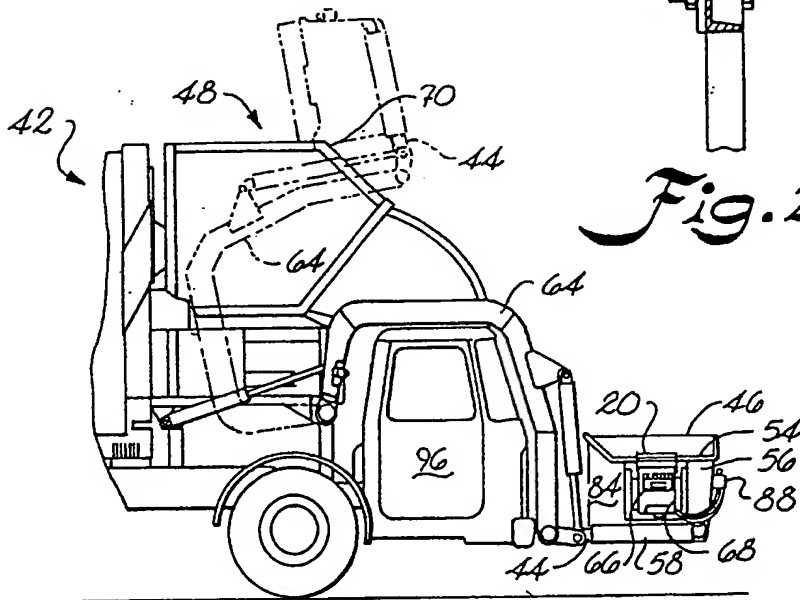


Fig. 2A

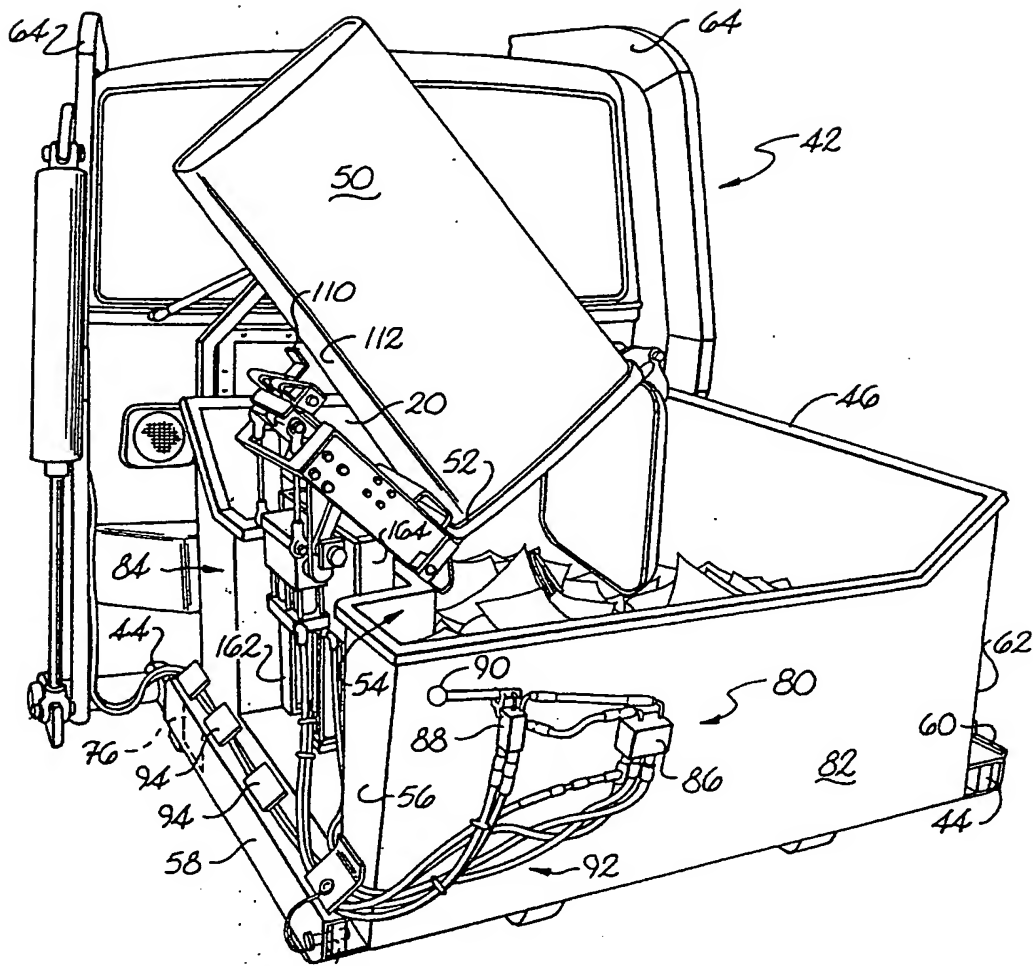


Fig. 3

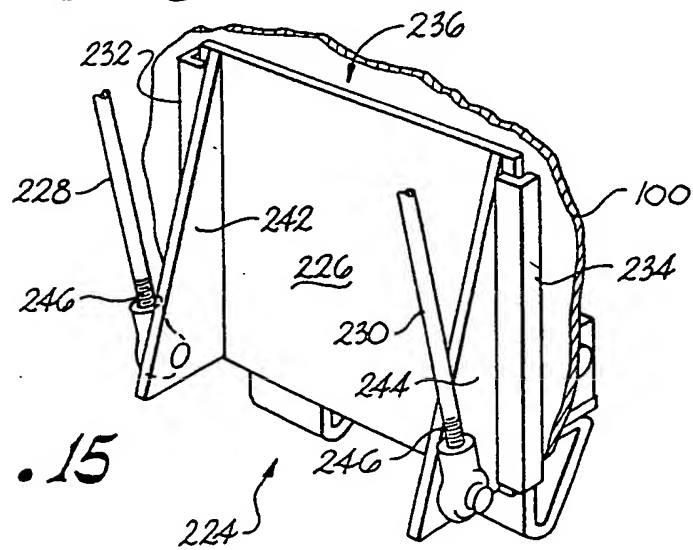


Fig. 15

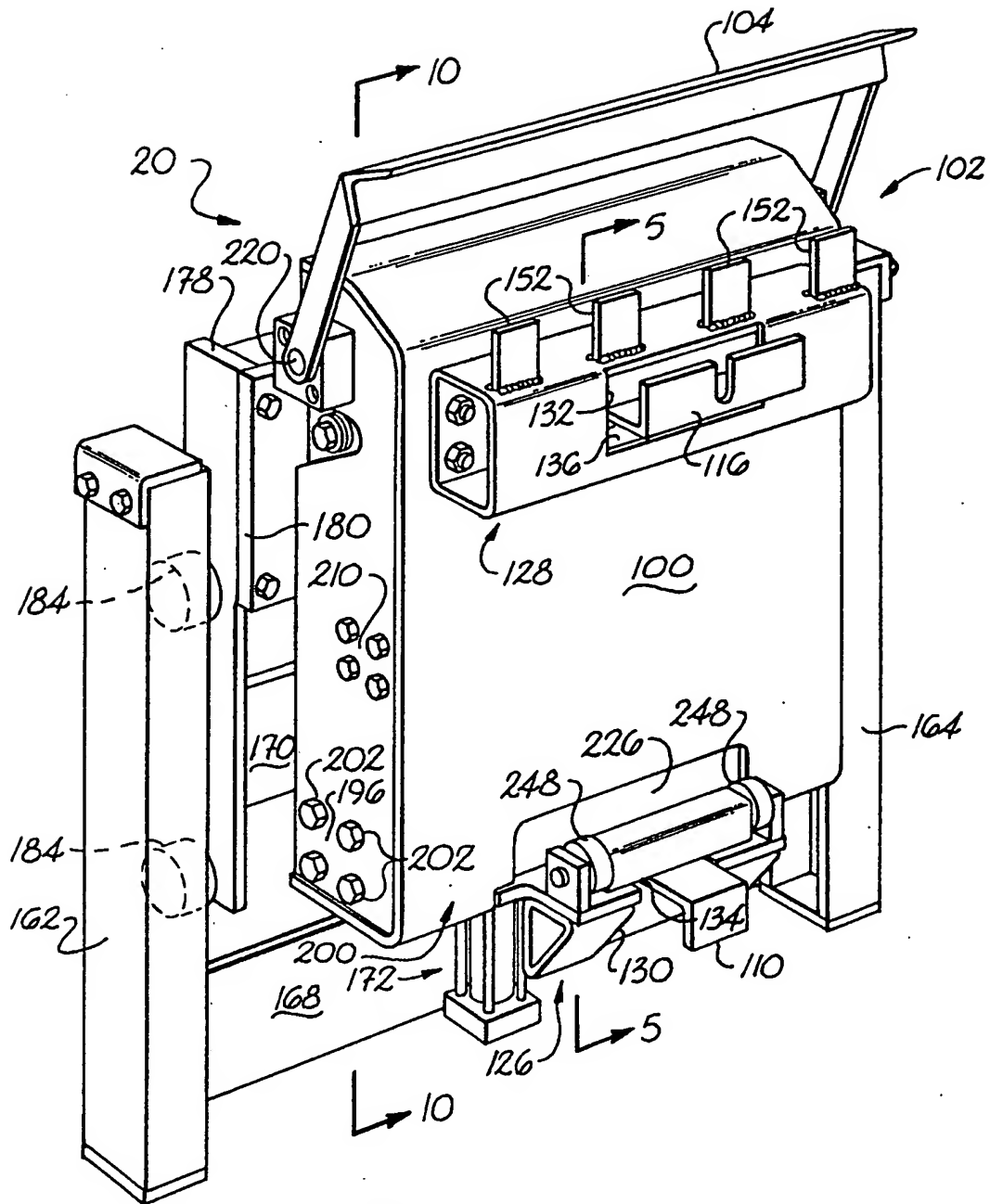


Fig. 4

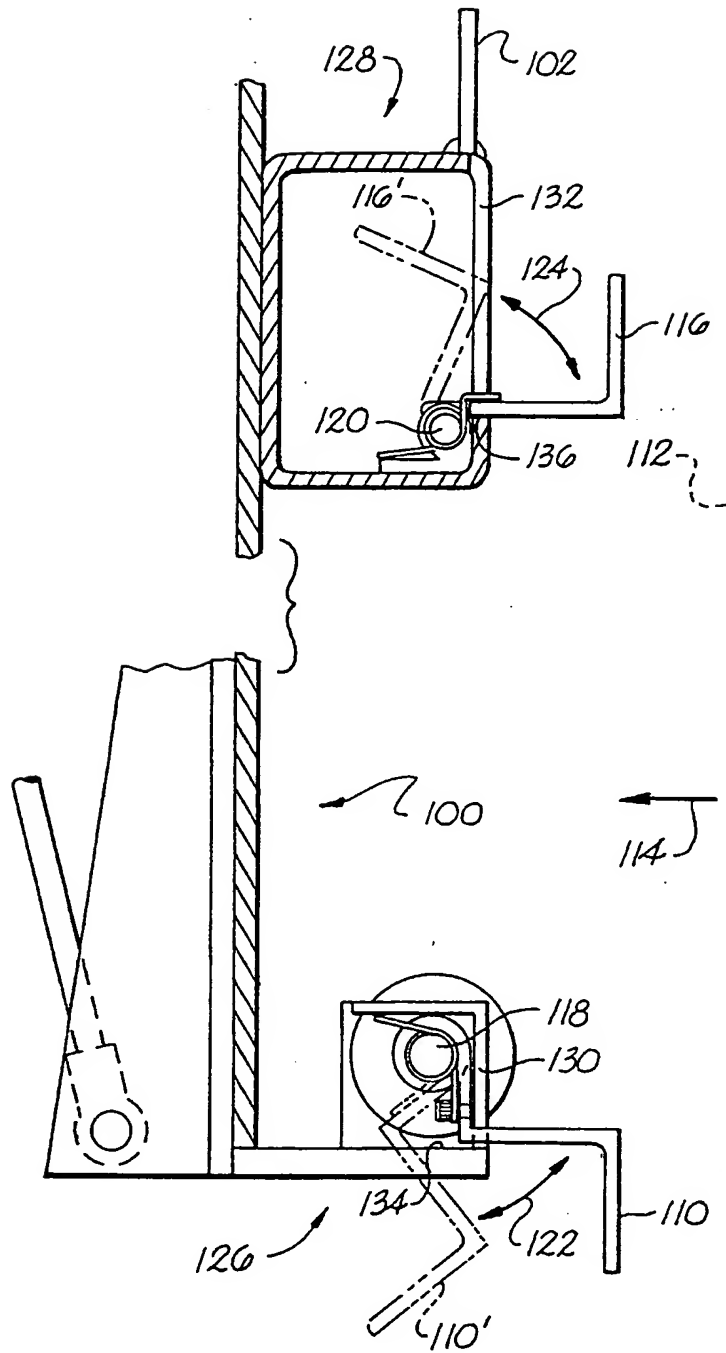
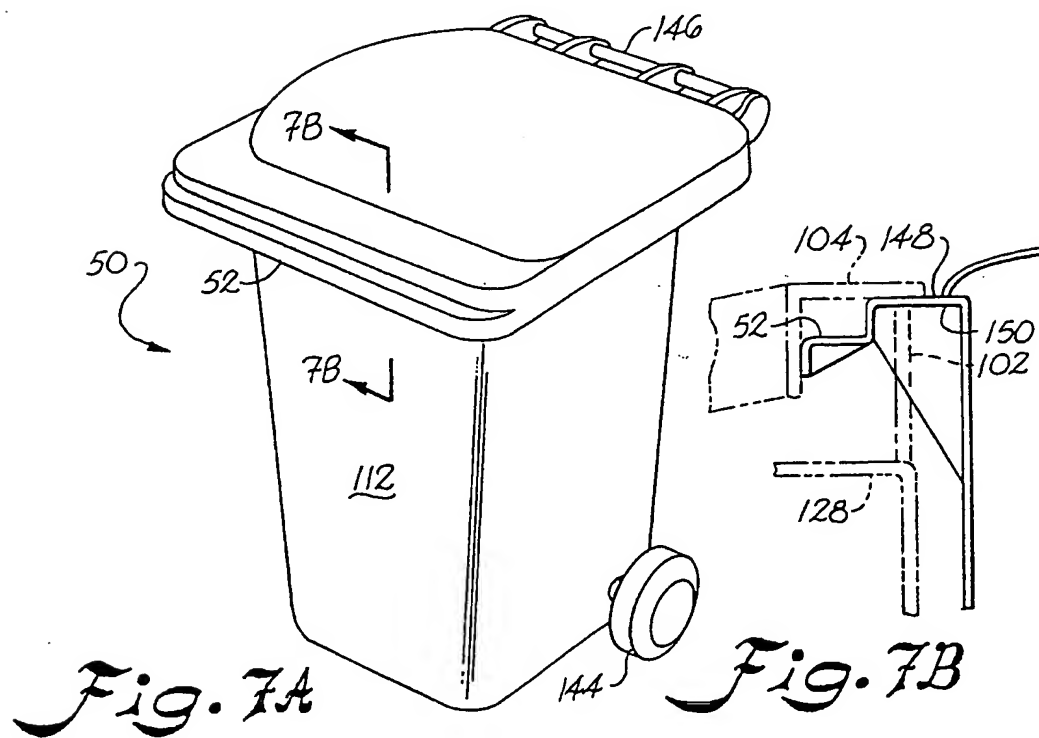
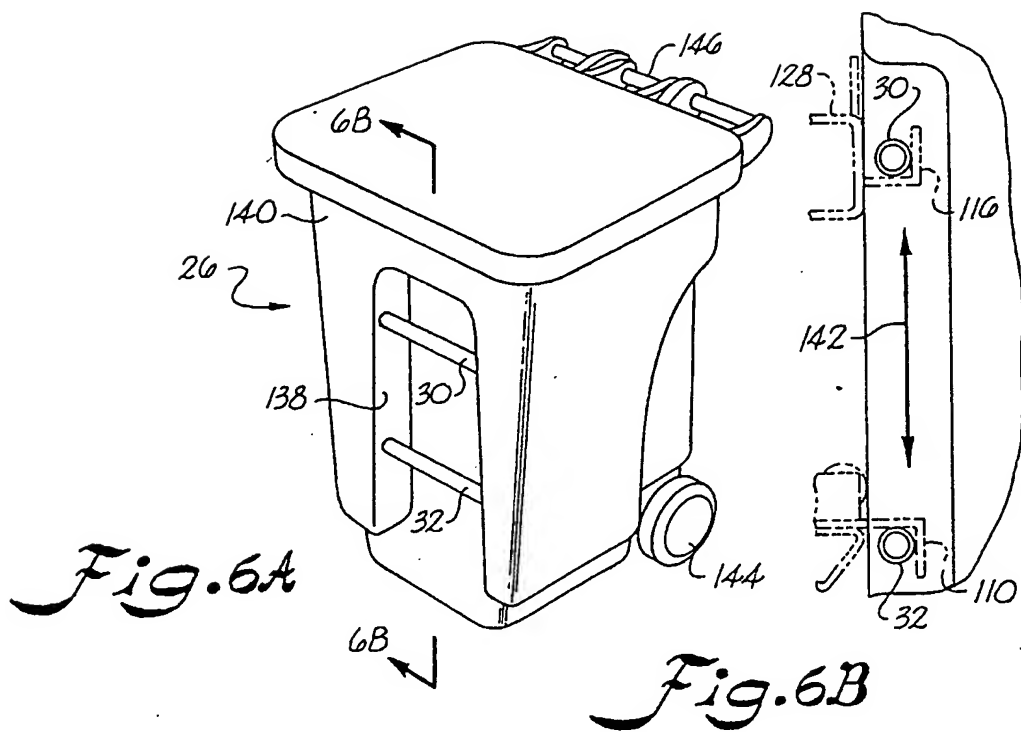


Fig. 5



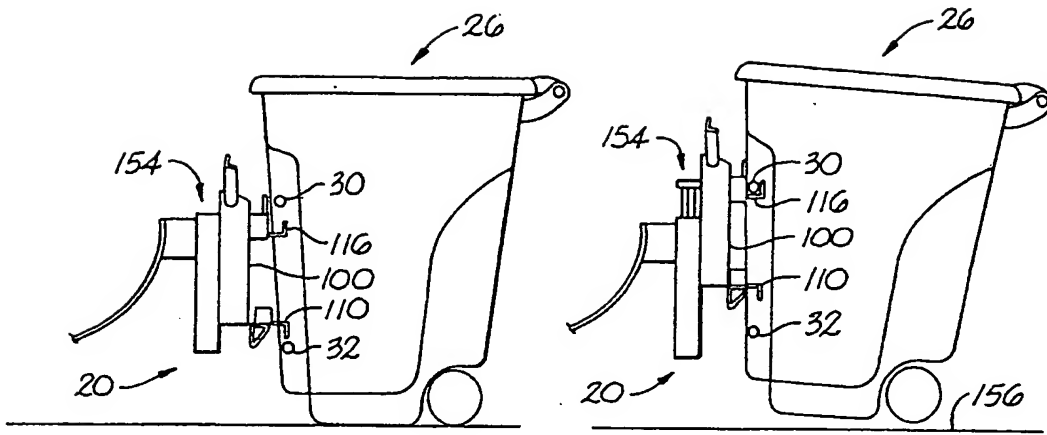


Fig. 8A

Fig. 8B

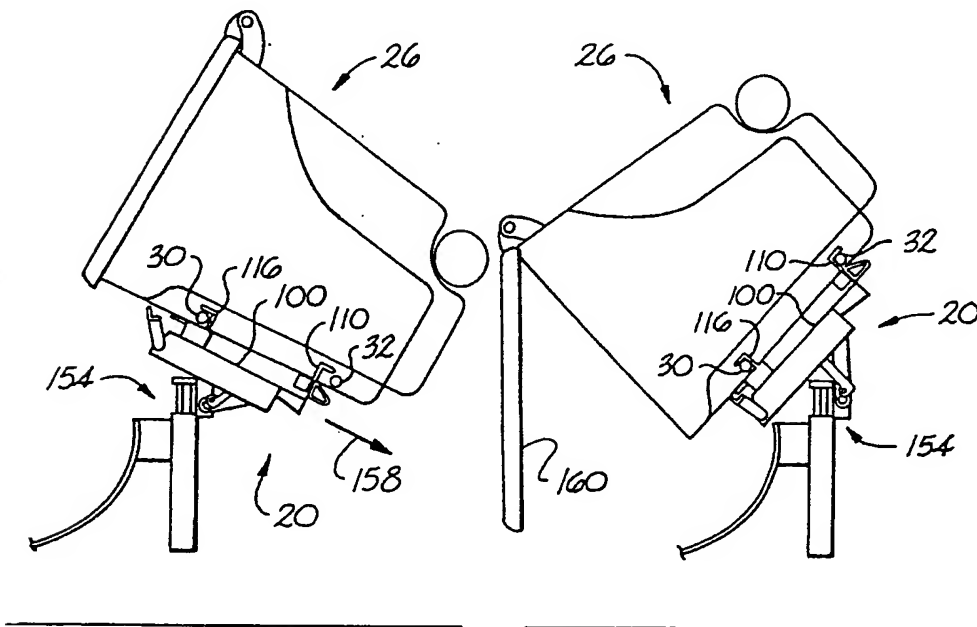


Fig. 8C

Fig. 8D



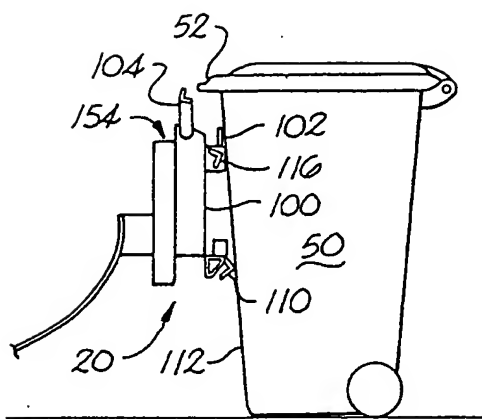


Fig. 9A

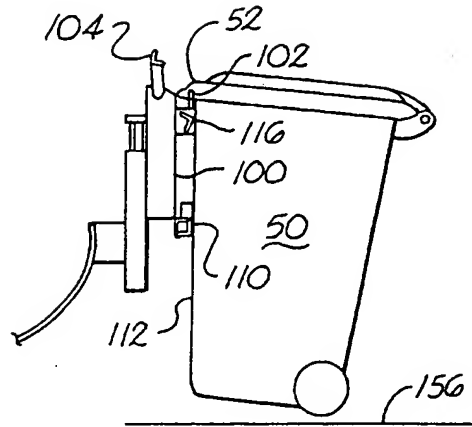


Fig. 9B

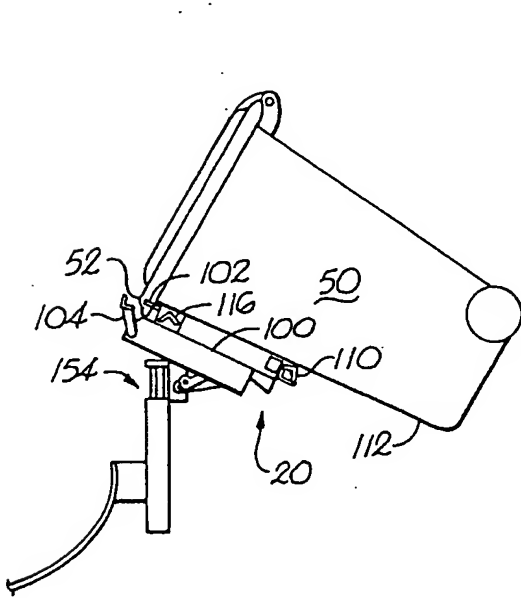


Fig. 9C

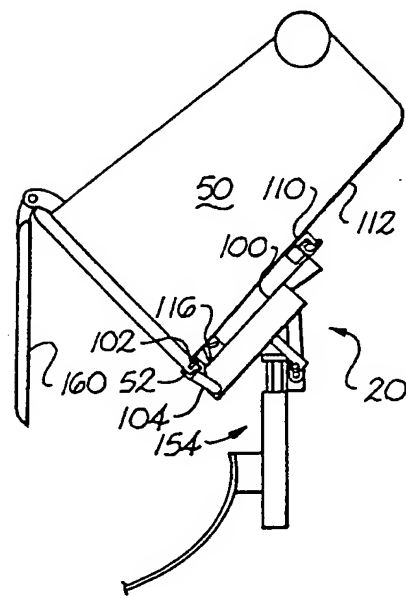


Fig. 9D

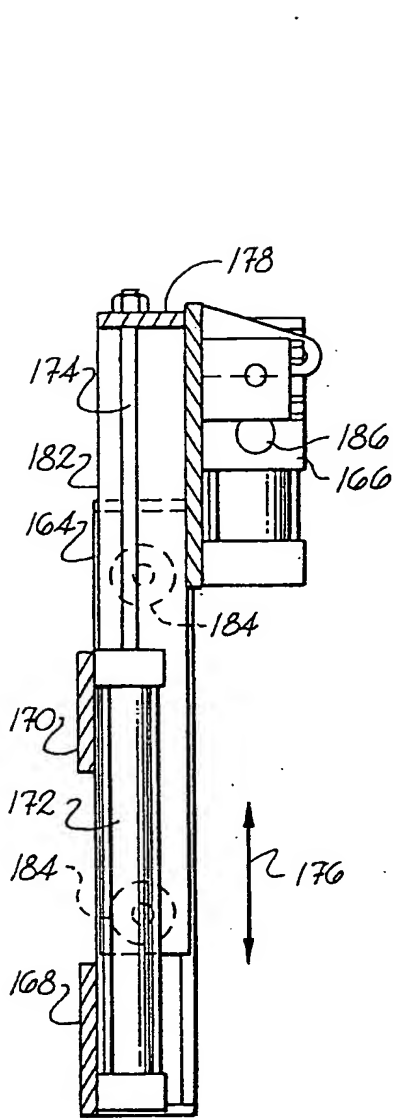


Fig. 14

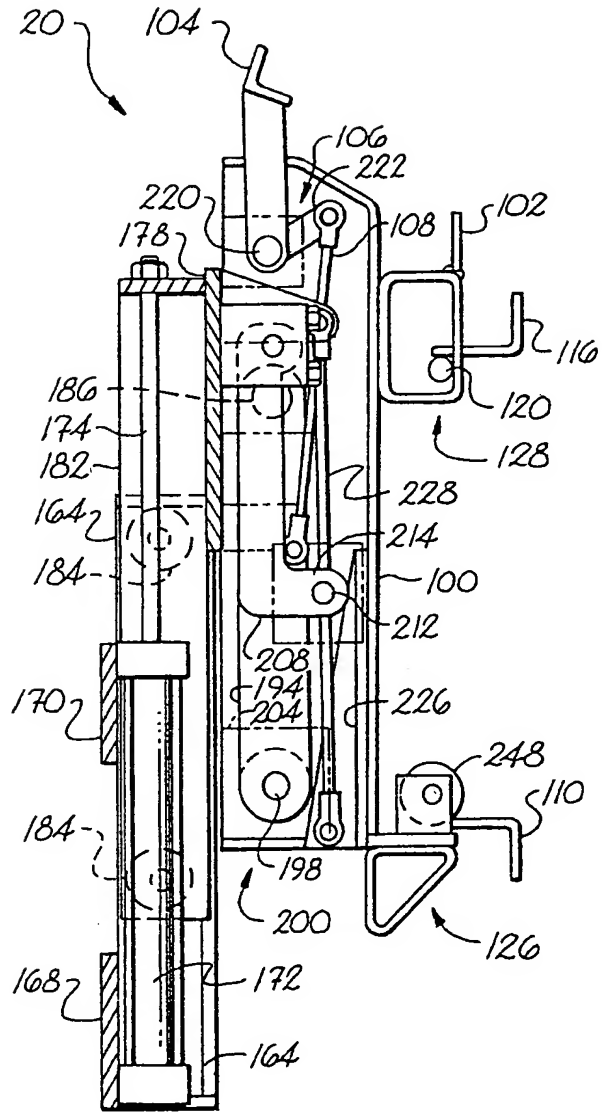


Fig. 10

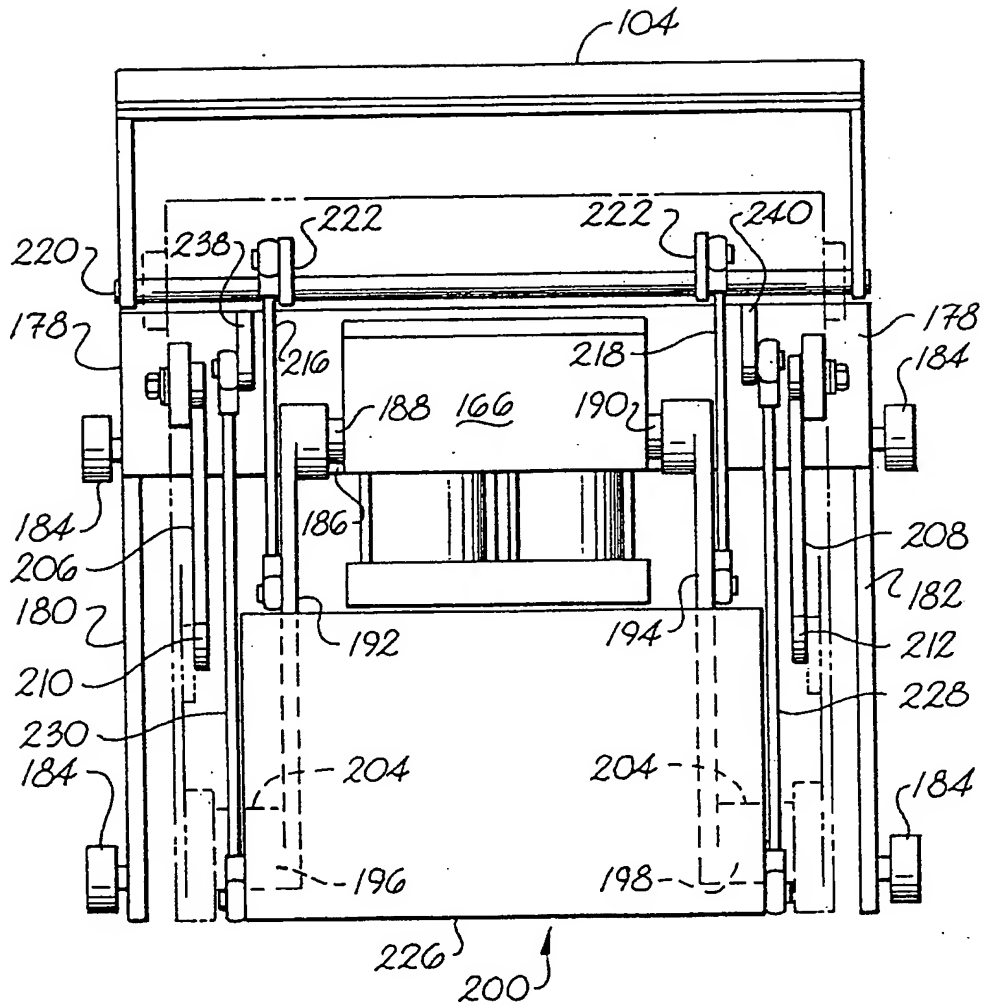
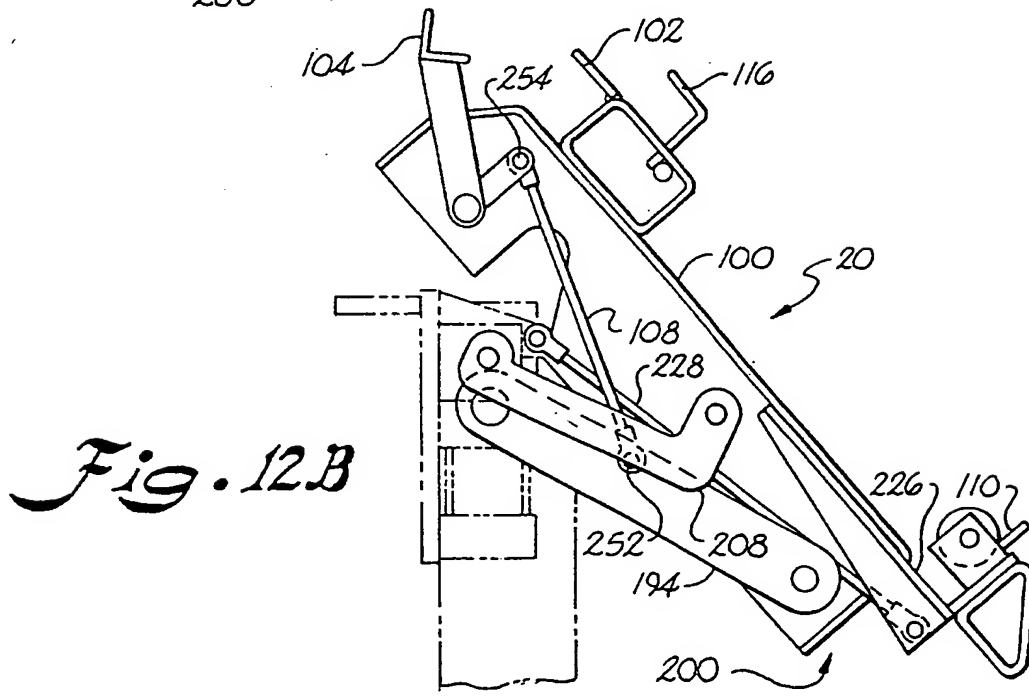
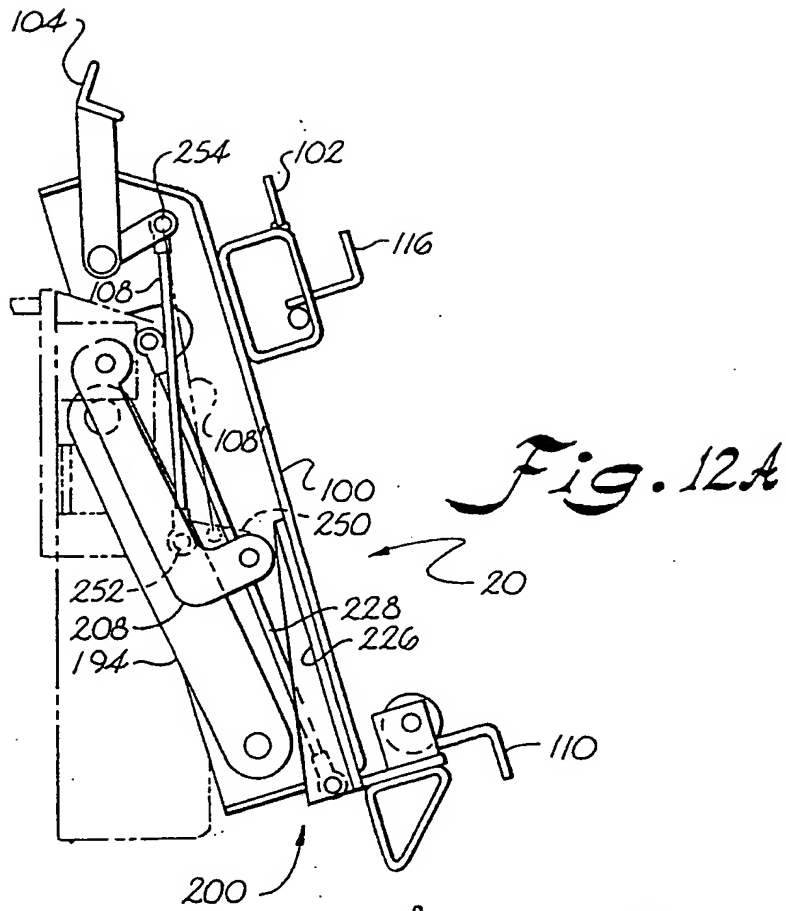
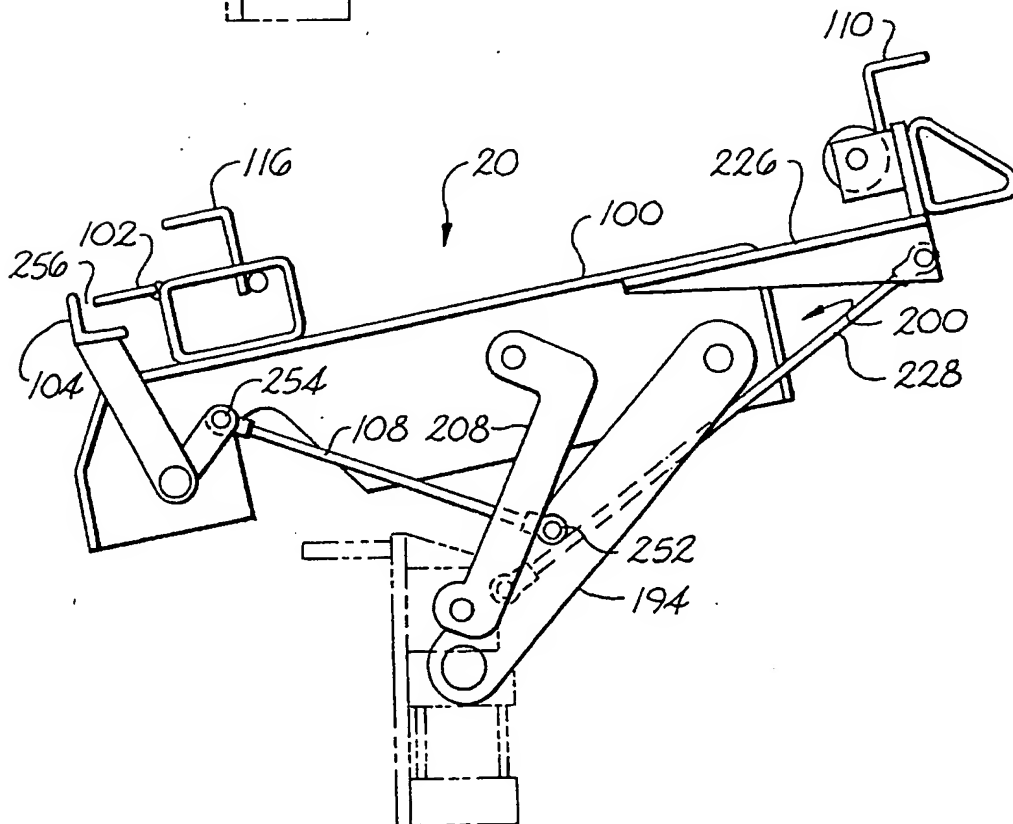
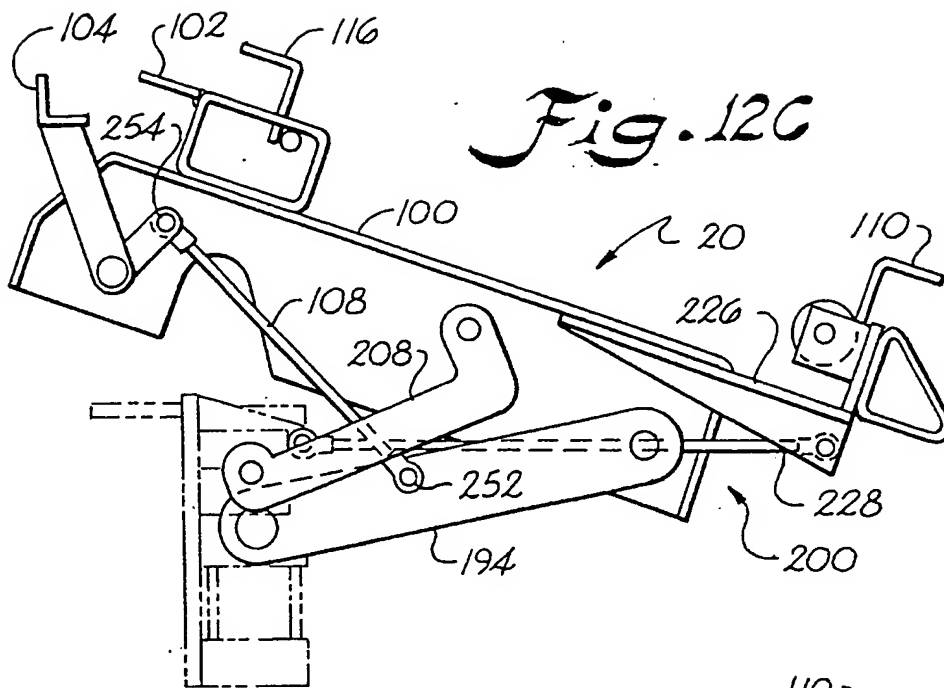
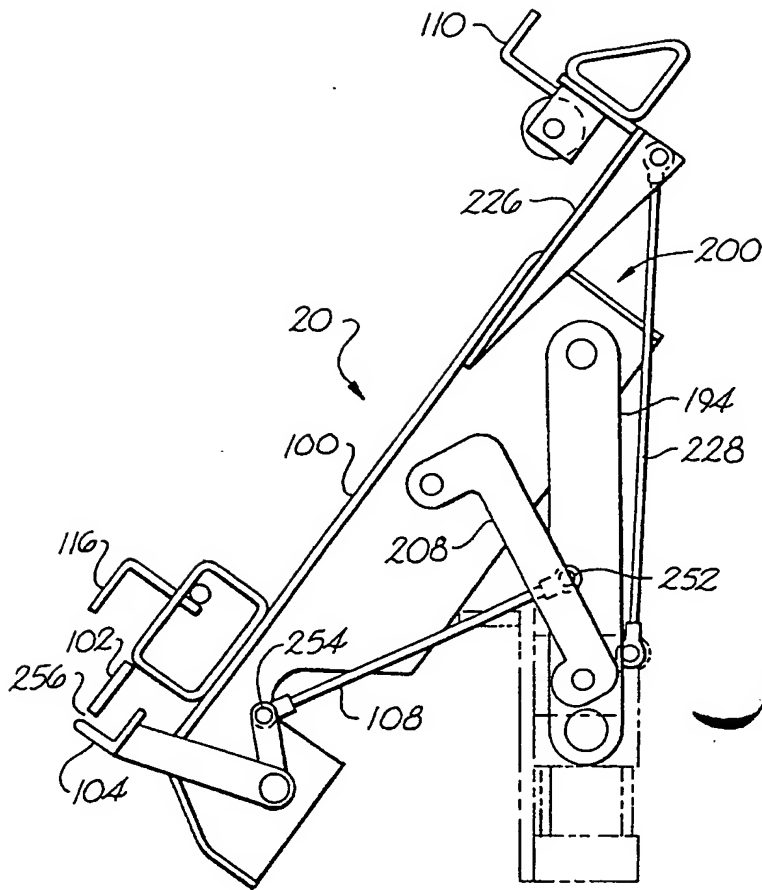


Fig. 11



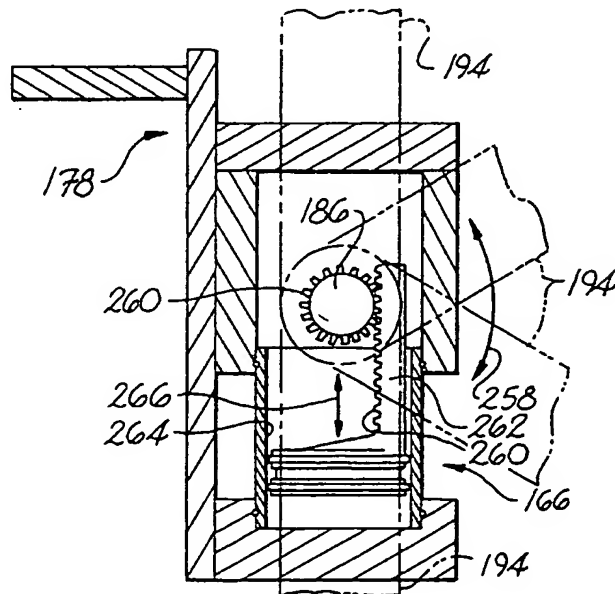


*Fig. 12D*

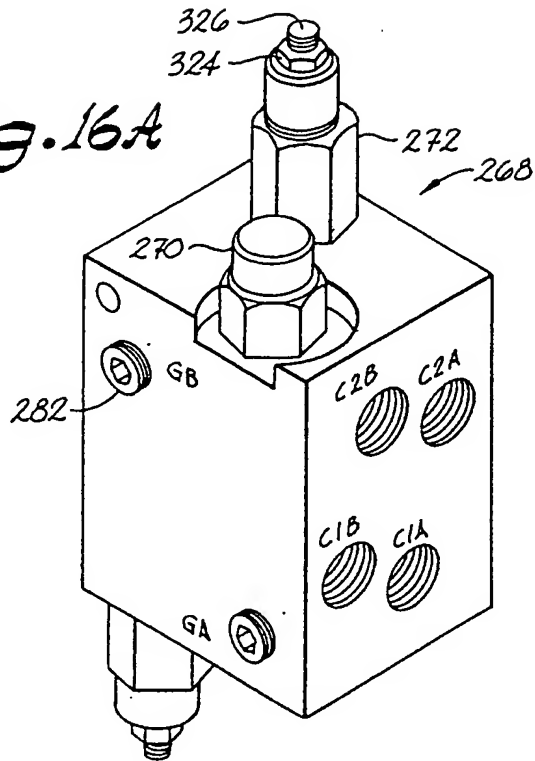


*Fig. 12E*

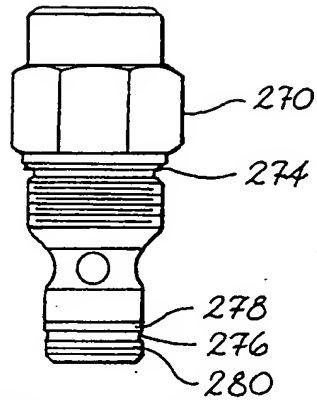
*Fig. 13*



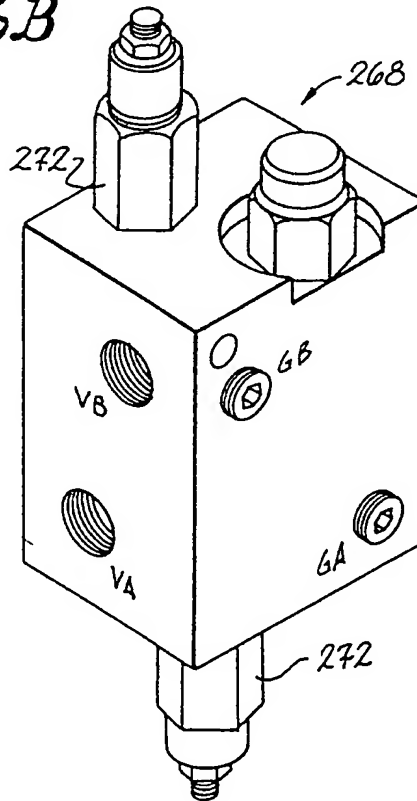
*Fig. 16A*



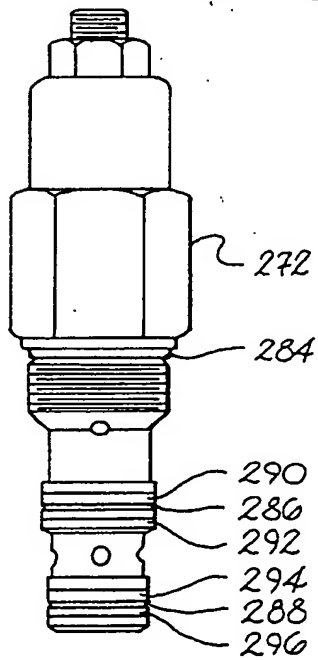
*Fig. 17*



*Fig. 16B*



*Fig. 18*



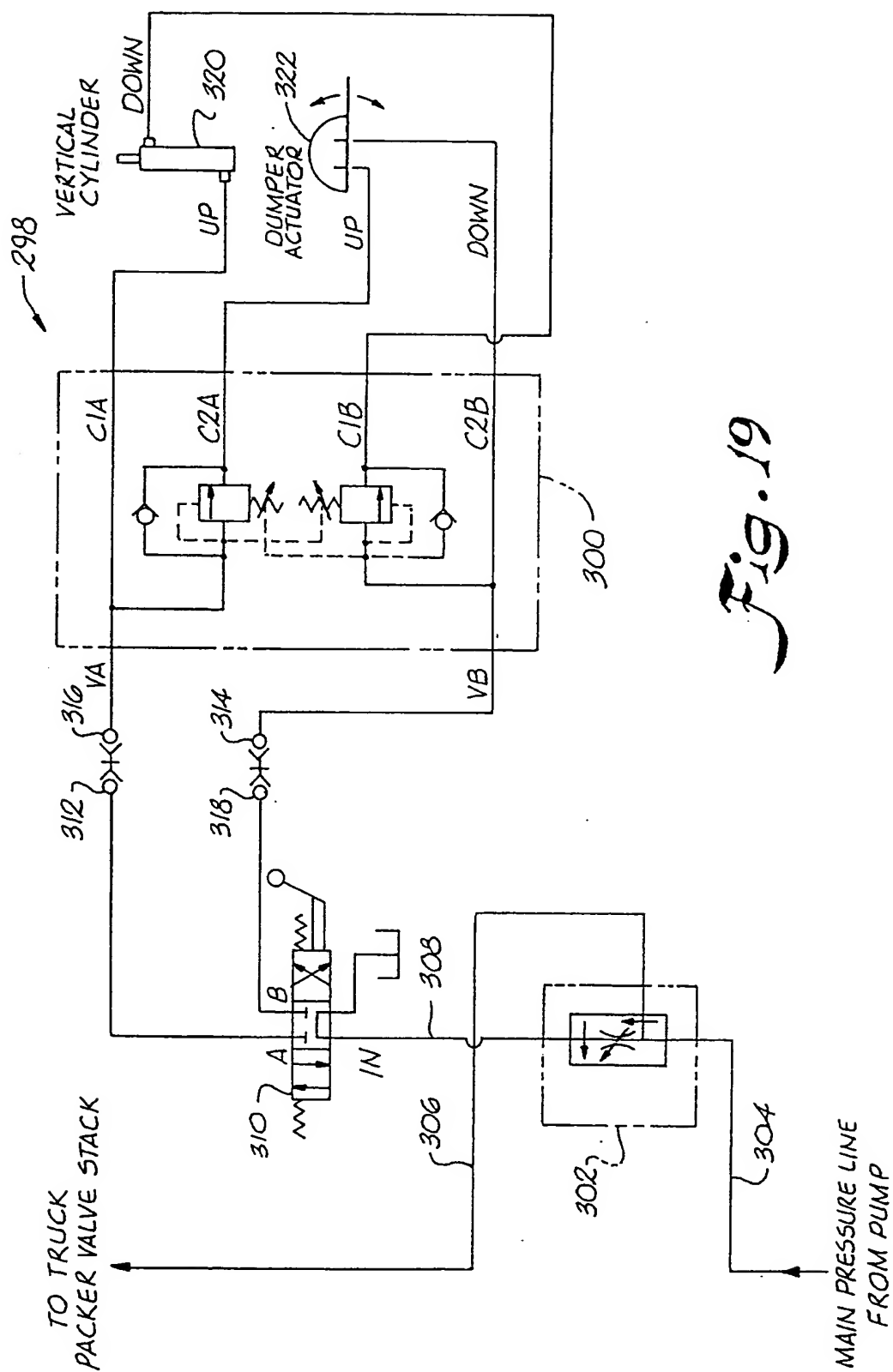
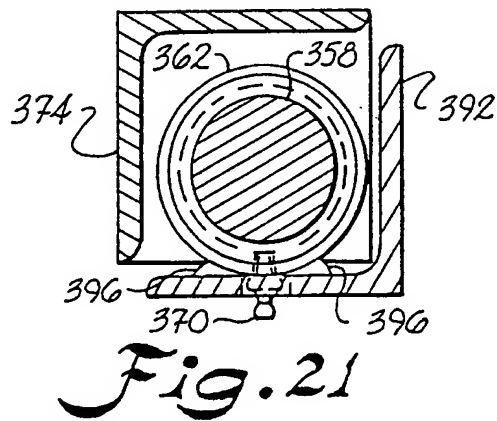
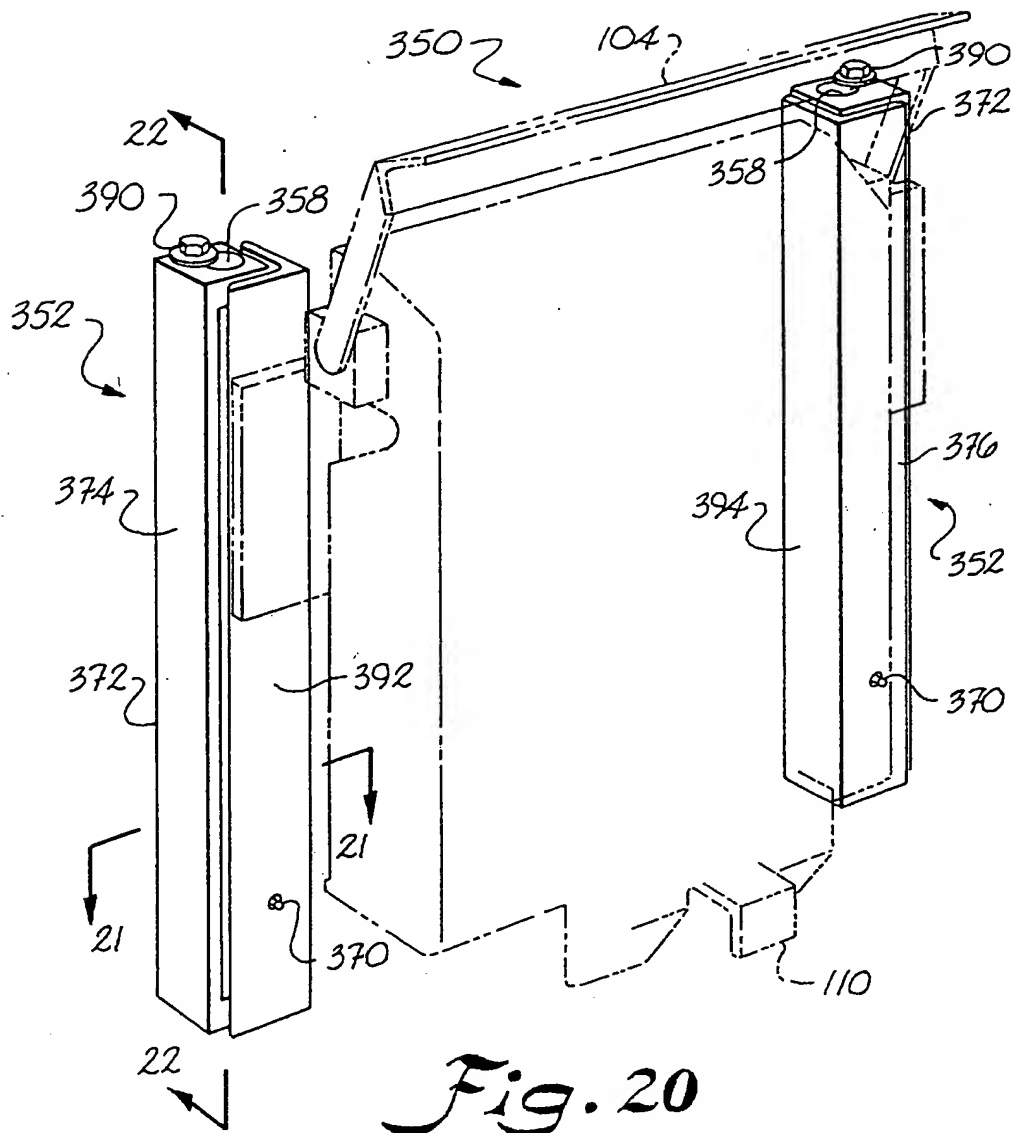


Fig. 19.





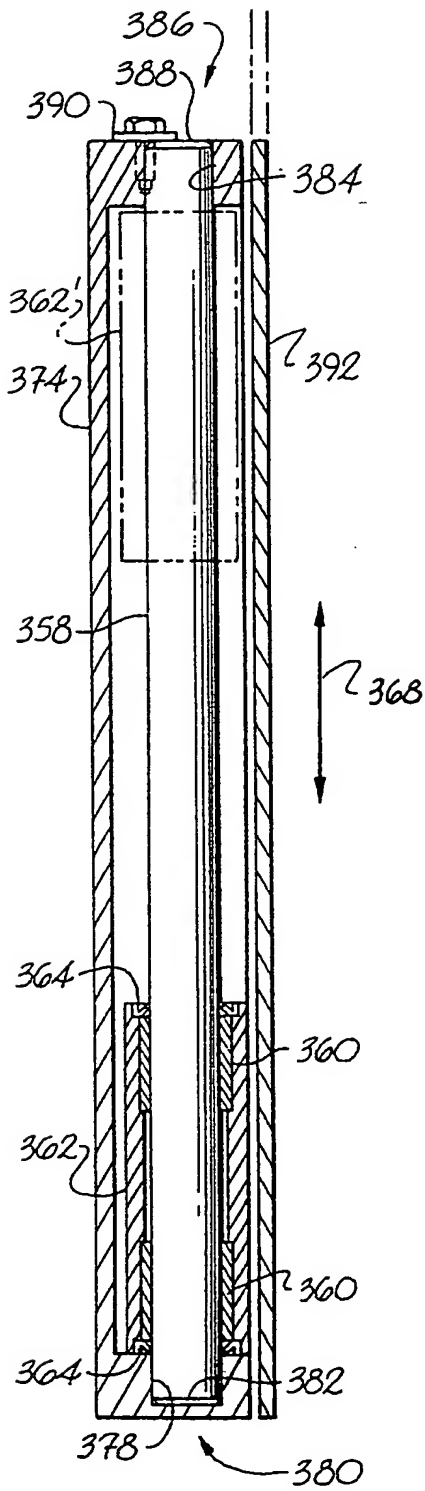


Fig. 22

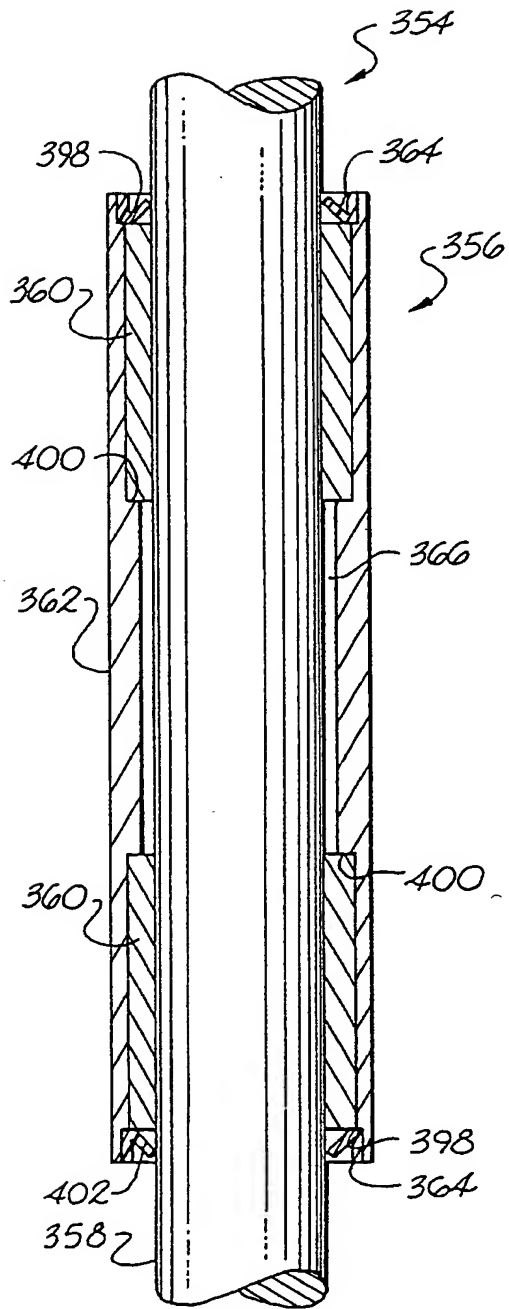
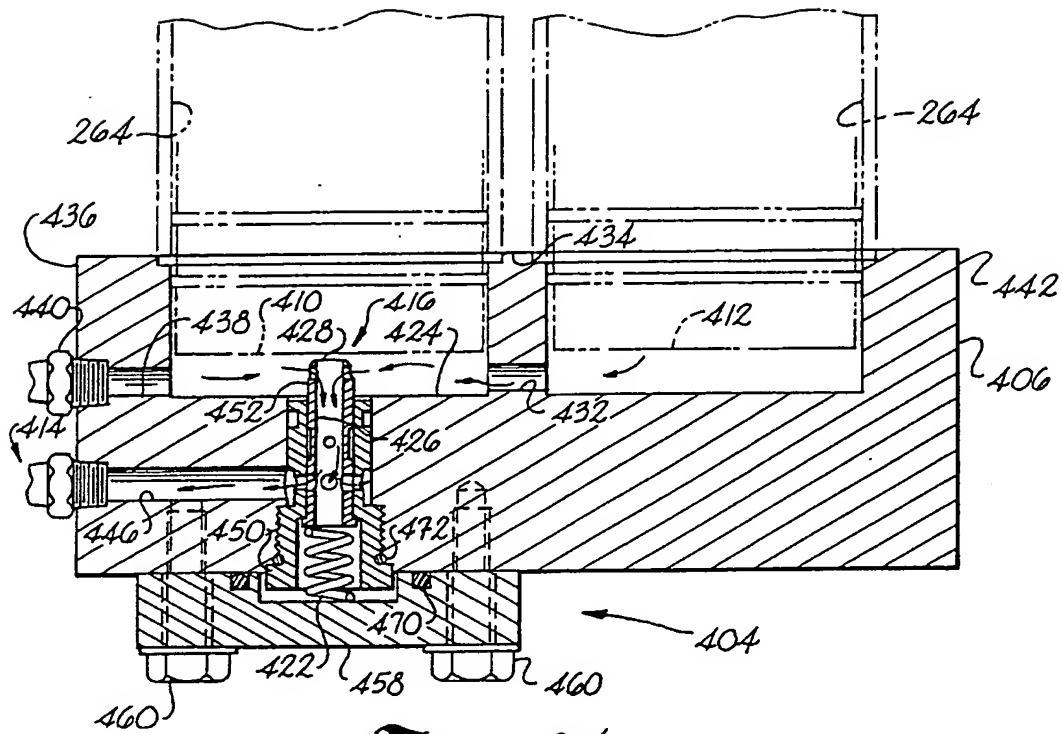
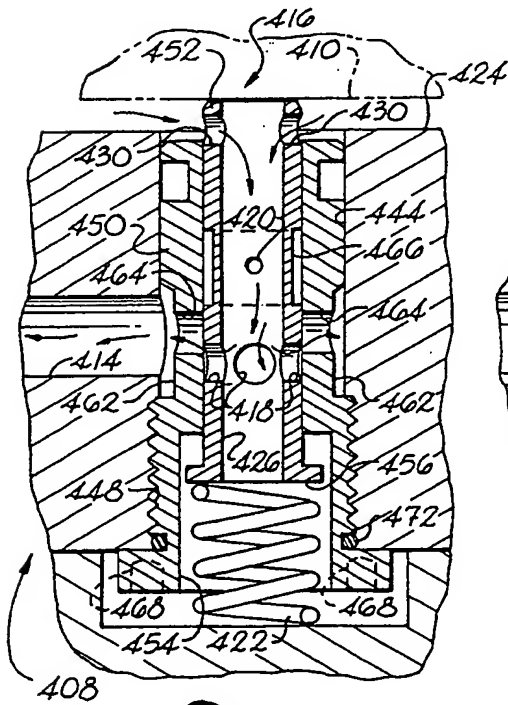


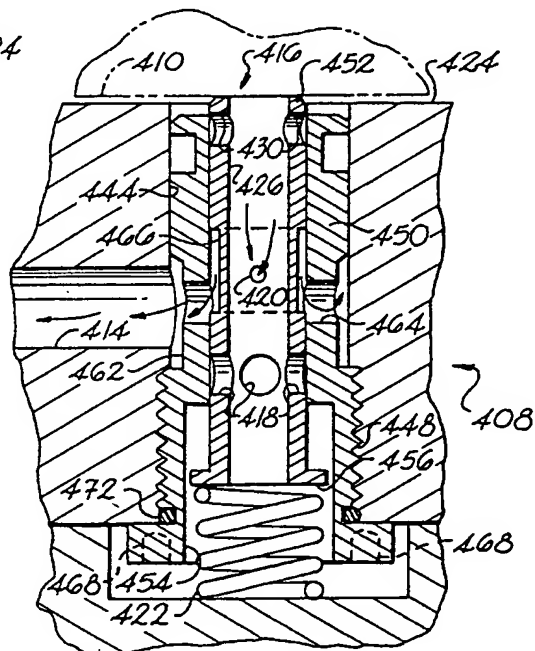
Fig. 23



*Fig. 24*



*Fig. 25*



*Fig. 26*

